end coil support attached to and bracing said end section and being thermally isolated from said rotor core, wherein the end coil support ~~attaches along~~abuts at least one ~~a~~ side surface of said coil end section, wherein said at least one side surface is in a plane substantially parallel to a rotor axis and said end coil support is wider than a width of the coil end section and covers the side of the coil end section.

2.(Currently Amended) In a rotor as in claim 1 wherein said at least one side surface of said coil end section is a pair of side surfaces of the coil end section, and said end coil support is a split clamp having a pair of opposing surfaces abutting the pair of side surfaces of the coil end section, wherein said opposing surfaces are each in a plane substantially parallel to said rotor axis.

3.(Currently Amended) In a rotor as in claim 1 wherein said at least one side surface of said coil end section is a pair of side surfaces of the coil end section, and the end coil support includes a pair of plates between which sandwich~~ed~~ the coil end section and said pair of plates each has a plate surface abutting one of the pair of side surfaces of the coil end section, wherein said plate surfaces are each in a respective plane substantially parallel to said rotor axis.

4.(Previously Amended) In a rotor as in claim 1 further comprising a cryogenic coupling providing cooling fluid to said coil winding, wherein said end coil support is cooled by conduction from said coil winding.

5.(Previously Amended) In a rotor as in claim 1 further comprising a rotor end shaft having a slot to receive said coil end section and end coil support, and said end shaft is thermally isolated from said end coil support.

6.(Previously Amended) In a rotor as in claim 1 wherein said end coil support braces an entire length of said coil end section.

7.(Previously Amended) In a rotor as in claim 1 wherein said end coil support is transverse to an axis of the rotor core.

8.(Previously Amended) In a rotor as in claim 1 further comprising a second coil end section adjacent a second end of said rotor core, and a second coil support bracing the second end coil end section.

9.(Previously Amended) In a rotor as in claim 1 further comprising side coil supports attached to a long side section of said coil.

10.(Previously Amended) In a rotor as in claim 9 wherein said side coil supports further comprises at least one tension rod extending transversely through said rotor core, and coil housings attached to opposite ends of the tension rod, wherein said coil housings each attached to an opposite long side section of the coil.

11. (Original)In a rotor as in claim 10 wherein said tension rod extends through a conduit in the rotor core.

12. (Currently Amended) A method for supporting a super-conducting coil winding on a rotor core of a synchronous machine comprising the steps of:

a. bracing an end section of the coil winding with an end coil support attached to at least one side of the end section in a plane substantially parallel to a rotor core axis, and wherein the end coil support is wider than the at least one side of the end section of the coil winding and covers the side of the end section;

b. assembling the coil winding, end coil support and rotor core;

c. attaching a rotor end shaft to said rotor core;

d. thermally isolating the end coil support from the rotor core and shaft.

13. (Currently Amended) A method as in claim 12 wherein said at least one side surface of said end section is a pair of side surfaces on the end section, and wherein the end section is braced with a split clamphaving a pair of opposing surfaces abutting the pair of side surfaces, wherein said opposing surfaces are each in a respective plane substantially parallel to said rotor axis

14. (Original) A method as in claim 12 wherein the assembling step includes inserting the end section of the coil and the coil support into a slot of the rotor end shaft.

15.(Currently Amended) A method as in claim 12 wherein said at least one side surface of said end section is a pair of side surfaces of the coil end section, and the bracing step includes applying plates ~~on opposite~~ to the pair of side surfaces of the end section, wherein the plates have opposite surfaces that are substantially parallel to the rotor coil axis.

16. (Original) A method as in claim 12 further comprising cryogenically cooling the coil, and cooling said end coil support by heat transfer between the coil and the coil support.

17. (Currently Amended) A rotor for a synchronous machine comprising:

a rotor core having at least one rotor core end orthogonal to a longitudinal axis of the rotor;

at least one end shaft attached to said rotor core end;

a race-track super-conducting (SC) coil winding extending around said rotor core and having a coil end section adjacent said rotor end;

a coil support brace attached to said coil end section and thermally isolated from said rotor core and rotor end shaft, wherein the coil support brace is affixed to at least one side surface of the coil end section, wherein said at least one side surface is substantially parallel to the axis of the rotor, and said coil support brace is wider than the at least one side surface of the coil end section, and covers the end section.

18. (Original) In a rotor as in claim 17 wherein said coil support brace is a split clamp.

19. (Original) In a rotor as in claim 17 wherein the coil support brace includes a pair of plates between which are sandwiched the coil end section.

20.(Original) In a rotor as in claim 17 further comprising a cryogenic coupling providing cooling fluid to said coil winding, wherein said coil support is cooled by conduction from said coil winding.

21. (Previously Amended) In a rotor as in claim 17 wherein said rotor end shaft has a slot to receive said coil end section and coil support, and said end shaft is thermally isolated from said coil support.

22. (Original) In a rotor as in claim 17 wherein said coil support brace covers an entire length of said coil end section.

23. (Original) In a rotor as in claim 17 wherein said coil support brace is transverse to an axis of the rotor core.

24. (Original) In a rotor as in claim 17 further comprising a second coil end section adjacent a second end of said rotor core, and a second coil support brace attached to the second coil end section.

25. (Original) In a rotor as in claim 17 further comprising coil side supports attached to a long side section of said coil.

26. (Original) In a rotor as in claim 17 further comprising at least one tension rod extending transversely through said rotor core, and coil housingsattached to opposite ends of the tension rod, wherein said coil housings each attached to an opposite long side section of the coil.

27. (Original) In a rotor as in claim 17 wherein said tension rod extends through a conduit in the rotor core.

REMARKS

Reconsideration of this application is requested. The objection to the specification and claims 1, 12 and 17 are traversed. The specification discloses and fully supports the limitation of the claims that that the coil support brace abuts a side surface of the coil end section, wherein the side surface is in a plane parallel to the rotor axis.

The claims have been amended to make clear that the side surface of the coil end section is in a plane substantially parallel to the rotor axis. The amendments should avoid a misperception, evident in the Action, that the claims indicate that an axis of the coil end section are parallel to the rotor axis. The claims do not state that an axis of the coil end sections are parallel to the rotor axis. Rather, the claims state that a side (or pair of sides) of the coil end section is parallel to the rotor axis. The coil support brace attaches to this side(s) of the coil end section.

Figures 3 and 6 show the coil support brace (58, 60) affixed, e.g. clamped, to a side surface of the coil end section. The side surfaces of the coil end section are each in a plane parallel to the rotor axis. The plates of the coil support brace sandwich the side surfaces of the coil end section to assist the section to withstand the centrifugal and torsional forces applied to the end section. The support plates are wide – wider than the coil end section -- to provide strength and rigidity to the coil end section.

The rejection of claims 1, 3-8, 12, 14-17 and 19-24 as being anticipated by Laskaris (U.S. Patent No. 5,548,168) is traversed. The rejected claims are directed towards a coil support for a superconducting coil on a rotor, wherein the coil support clamps against sides of the coil and the support is wider than the coil to brace the end section of the coil and covers the coil side.

Laskaris '168 discloses a "contoured housing 66" for a cooling tube (84). The contour housing extends along the outer periphery of the rotor coil winding. The contour housing is affixed to the outside end surface of the coil. This end surface is perpendicular to the rotor axis. The contour housing is not affixed to the side surfaces of the Laskaris

'168 end coil section that are parallel to the rotor axis. The side surfaces of the coil are distinct from the end surface of the coil that abut the coil housing.

The Laskaris '168 coil housing (66) provides no direct support to the side surfaces of coil (20). The coil housing is not affixed to the side surfaces of the coil. Moreover, the Action incorrectly states that the coil housing is as wide as the coil. The Action should have stated that the coil housing is a thick as the coil, because the coil housing abuts the edge of the coil. As the coil housing does not abut the sides of the coil – where the sides are parallel to the rotor axis – it is not clear from the patent drawings in Laskaris '168 whether the coil housing is wider than the sides of the coil. Further, because the coil housing does not abut the sides of the coil, it is irrelevant whether the coil housing is as wide as the sides of the coil.

The Action asserts that the spacer plates (72) support the coil and sandwich the sides of the coil. Contrary to the Action, the spacers merely prevent the coil from sliding from side to side within the thermal shield (22). There is no suggestion that the plates (72) brace the coil, they are not wider than the coil sides, and they do not cover the coil and do not cover the coil. The spacer plates in Laskaris '168 do not take the place of the coil housing (66) or serve the same support function.

There are several claim elements that are not disclosed or suggested by Laskaris '168 including:

- An end coil support that "abuts at least one side surface of said coil end section, wherein said at least one side surface is in a plane substantially parallel to a rotor axis" (Claims 1, 12 and 17)

The end coil support being wider than a width of the coil end section and covers the side of the coil end section. (Claims 1, 12 and 17)

- Wherein the coil support is a split clamp having opposing surfaces abutting the sides of the coil. (Claims 2 and 13, see also claim 18). The spacer plate (72) shown in Laskaris are not plates which sandwich the end section of the coil.
- Wherein the coil support is a pair of plates that sandwich the sides of the end coil. (Claims 3 and 15, see also claim 19). The spacer plate (72) shown in Laskaris are not plates which sandwich the end section of the coil.

The obviousness rejection of claims 9-11 and 25-27 are traversed for substantially the same reasons as stated above regarding Laskaris '168. Further, the Rios patent (U.S. Patent No. 4,277,705) does not suggest that the Laskaris coil housing (66) be modified to form the claimed invention. The coil support disclosed in Rios are end sections (20) of a stack of coils and plates that form the rotor core. The rotor core section (30) does not provide support to the end section of the coils. Rios does not suggest that the coil winding housing (66) in Laskaris '168 be modified to form the end coil support section shown in the present invention. Further, Rios does not disclose or suggest the side coil support as shown in the present application.

The rejection of dependent claims 2, 13 and 18 as being obvious over Laskaris '168 in view of Nottingham (US Patent 4,072,873) is traversed for the reasons stated above for the corresponding independent claims. Nottingham does not disclose a split clamp for a rotor or for a moving coil. Rather, Nottingham discloses a stationary split

clamp for a stator. There is nothing in Nottingham to suggest that the stator split clamp should be used to replace the spacers 72 and coil housing 66 in Laskaris '168.

All claims are believed to be in good condition for allowance. If any small matter remains outstanding, the Examiner is respectfully requested to telephone Applicant's attorney. Prompt reconsideration and allowance of this application is respectfully requested.

Respectfully submitted,

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